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EXAMINER	
SHERALI, ISHRAT I	

ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/420,775	YAMADA ET AL.	
	Examiner	Art Unit	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-23 and 26-38* is/are rejected.

7)☐ Claim(s) *24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments/Amendment

1. This action is in response to amendment received on 10/05/2004.

Examiner apologizes for withdrawing the allowable subject matter of 8-10, 14, 16-18, 22-23 and 31 based on the further review of U.S Patent to Eschbach et al. (US 5,450,217), Murakami (US 5,335,097) and newly found U.S Patent to Miyashita et al. (US 6,031,543)

Claim Objection

2. Claim 9 is objected because it is dependent on canceled claim 8. Claim 9 should be dependent claim 8. Proper correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 9-13, 15-21, 26-30, 32 and 36 are rejected under 35 USC 102 (b) as being unpatentable over Eschbach et al. (US 5,450, 217) in view of Murakami (US 5,335,097).

Regarding claim 1, 26, 32, 36 Eschbach discloses discriminating characteristics of an image (Eschbach, col. 6, lines 6-10, Eschbach shows discriminating the color

value of pixel in the image r,g,b = (255, 254, 253) which corresponds to discriminating characteristics of an image);

calculating saturation information of the image (Eschbach, col, lines 6-10, Eschbach shows converting the image pixel vale into luminance-hue- saturation space and saturation of the image pixel is 0.008 which corresponds to calculating saturation information of the image);

setting a parameter used to convert saturation of the image in accordance with characteristics discriminated (Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". This corresponds to setting a parameter used to convert saturation of the image in accordance with characteristics discriminated);

converting the saturation of the image on the basis of the parameter (See Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image".

Examiner notes saturation of the overall image is enhanced based on Starget [parameter] and Sav [characteristic discriminated] using digital filter. This corresponds to converting the saturation of the image on the basis of the parameter).

Eschbach however has not explicitly disclosed holding saturation information in correspondence with plurality of attributes and sets the parameter on basis of the saturation with the plurality of attributes.

In the same field of endeavor Murakami shows holding saturation information in correspondence with plurality of attributes and sets the parameter on basis of the saturation with the plurality of attributes (Murakami in col. 15, lines 9-20, states "one pixel is designated as example pixel for color correction another pixel as an example for which color correction is not required R1x, G1x and B1x signals [color correction required], R0x, G0x, and B0x signal [color correction not required], H1x [hue], S1x [saturation] and L1x luminance] signal [color correction required] and H0x, S0x and L0x are stored in the effective range value memory". Examiner notes that saturation information of pixel whose color is to be corrected and pixel whose color is not be corrected is stored along RGB values of pixels and Hue and Luminance of pixel [plurality of attributes of pixel] which corresponds to holding saturation information in correspondence with plurality of attributes and in col. 15, lines 20-25, Murakami states absolute differences between H1x, S1x and L1x and Hu, Su, Lu and H0x, S0x and L0x signals and Hu, Su, Lu are stored in effective range memory as an effective range dH, dS and DL [parameter]. These averages are derived from the following equation:

dH =(H1x-Hu) +(H0x -Hu) divided 2, dS =(S1x-Su) +(S0x -Su) divided 2, and dL =(L1x-Lu) +(L0x-Lu) divided 2. Examiner notes that , dH, dS and dL corresponds to the parameters in the system of Murakami which are calculated based on the saturation, hue and luminance [plurality of attributes] of pixel values which corresponds to holding saturation information in correspondence with plurality of attributes and sets the parameter on basis of the saturation with the plurality of attributes.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to hold saturation information in correspondence with plurality of attributes and sets the parameter on basis of the saturation with the plurality of attributes as shown by Murakami in the system of Eshbach because such a process provide a system of controlling of execution of color correction processing as stated by Murakami in col. 17, lines 1-10.

Regarding claims 2 and 27, Eschbach discloses discriminating of the attributes to which image belongs (See Eschbach, col. 6, lines 7-8, Eschbach discrimination color values [discriminating attribute] of image pixel [r, g, b]).

Regarding claims 3 and 28, Eschbach discloses attribute is color attribute (See Eschbach, col. 6, lines 7-8, Eschbach discrimination color values [discriminating attribute] of image pixel [r, g, b]).

Regarding claim 4, Eschbach discloses attribute is set in correspondence with the object (See col. 4, lines 43-45, Eschbach shows segmenting the image which identify type of image pictorial or non-pictorial and on col. 6, lines 7-8, Eschbach

discrimination color values [discriminating attribute] of image pixel [r, g, b] i.e Eschbach shows attribute is set in correspondence with the object i.e pictorial or non-pictorial).

Regarding claim 5, Eschbach discloses attribute includes one of "person", "flower", "sky", "grass" and "general background" (See Eschbach, col. 4, lines 43-45, Eschbach shows segmenting the image which identify type of image pictorial or non-pictorial, pictorial image would include one of person", "flower", "sky", "grass" and non-pitorial would include background).

Regarding claim 6, Eschbach discloses attribute includes "white" that image is substantially white (See Eschbach, col. 4, lines 43-45, Eschbach shows segmenting the image which identify type of image pictorial or non-pictorial, pictorial image can include white object such as white car or non pictorial such as character can include white background).

Regarding claim 7, Eschbach discloses attribute further include "other" which does not belong to any other attribute (See Eschbach, col. 4, lines 43-45, Eschbach shows segmenting the image which identify type of image pictorial or non-pictorial, non pictorial image can include text which would be other attribute).

Regarding claim 9, holding optimal saturation values in units of attributes (Murakami in col. 15, lines 9-20, states "one pixel is designated as example pixel for color correction another pixel as an example for which color correction is not required R1x, G1x and B1x signals [color correction required], R0x, G0x, and B0x signal [color correction not required], H1x [hue], S1x [saturation] and L1x luminance] signal [color correction required] and H0x, S0x and L0x are stored in the effective range value

memory" and col. 15, lines 20-25, Murakami states absolute differences between H1x, S1x and L1x and Hu, Su, Lu and H0x, S0x and L0x signals and Hu, Su, Lu are stored in effective range memory as an effective range dH, dS and DL. Examiner notes effective range dS [effective range of saturation] corresponds to optimal saturation value which is based on pixels color values i.e Murakami shows holding optimal saturation values in units of attributes of pixels color values).

Regarding claim 10, Eschbach, discloses parameter to convert saturation of color indicated by the attribute in the image into a saturation value held (Eshbach col. 6, lines 53-66, states "average saturation of image [r,g,b image attribute] is determined, average saturation is a value Sav [parameter] , next the value of Sav is thresholded against the value of Starget [optimal saturation], received from external source [which is obviously stored or holded] . Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". Examiner notes when Sav > Starget "1" is outputted that is pixel saturation value would be Starget [optimal saturation].

Regarding claims 11 and 30, Eshbach has shown segmenting an image (See col. 4, lines 42-45, segmenting the document image).

Eschbach has not explicitly shown segmenting the image into blocks and discriminating attributes in units of blocks.

In the same field of endeavor Murakami discloses segmenting the image into blocks and discriminating attributes in units of blocks (See Murakami, figure 3, 4a, and

4b segmenting the image in units of blocks and col. 11, lines 26-40, Murakami shows segmenting the image into pixel blocks and Murakami shows discriminating color [attribute] of pixel blocks where color correction is required and pixel blocks where color correction is not required.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to segment the image into blocks and discriminating attributes in units of blocks as shown by Murakami in the system of Eschbach because such a system provide color-saturation correction for localized area of the image as opposed to the whole image and thereby saving processing time of the image processor.

Regarding claim 12, Murakami discloses set the parameter with high priority when attributes differ in unit of blocks (See Murakami, See Murakami, figure 3, 4a, and 4b segmenting the image in units of blocks and col. 11, lines 26-40, Murakami shows segmenting the image into pixel blocks and Murakami shows discriminating color [attribute] of pixel blocks where color correction is required and pixel blocks where color correction is not required i.e Murakami shows set the parameter with high priority when attributes differ in unit of blocks).

Regarding claim 13 and 15, Eschabach discloses setting plurality of parameters and saturation conversion is determined based on plurality of parameters (See Eschbach Eshbach col. 6, lines 53-66, states "average saturation of image [r,g,b image attribute] is determined, average saturation is a value Sav [parameter] , next the value

of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". Examiner notes that Sav and Starget are plurality of parameters and saturation is enhanced based is determined based on Sav and Starget).

Regarding claim 16, Eschbach discloses saturation conversion on high and low saturation on the basis of basis of plurality of parameters(Eshbach col. 6, lines 53-66, states "average saturation of image [r,g,b image attribute] is determined, average saturation is a value Sav [parameter] , next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 [saturation conversion on high and low] is returned to drive coefficient calculation". This corresponds to saturation conversion on high and low saturation on the basis of basis of plurality of parameters [Sav and Starget]).

Regarding claim 17-18, Eschbach discloses saturation conversion characteristic exhibits a monotonous increase and decrease (Eschbach in col. 3, lines 51-53, FIG 2A shows saturation conversion characteristic of saturated which shows a monotonous increase and decrease).

Regarding claim 19, Escbach discloses calculating saturation information by converting the image into a second color space (See Eschbach, col. 6, lines 6-10, Eschbach shows to calculate saturation S, rgb value are converted into HSV space).

Regarding claim 20, Eschbach discloses converting image into first color space which has been saturated converted (See Eschbach, col. 6, lines 36-40, Eschbach shows after saturation correction image pixel value is converted back to rgb values).

Regarding claim 21, Eschbach discloses first color space is RGB and second is HLS (See Eschbach, col. 6, lines 7-10 and col. 5, lines 11-15, Eschbach shows first color space is RGB and second is HLS [luminance-hue-saturation one such space is HSV, col. 5, lines 11-15]).

Regarding claim 29, Eschbach discloses setting the parameter to convert saturation of a color indicated by the attribute in the image which is set in advance in units of attributes (See Escbach, col. 6, lines 6-30, Eschbach shows equation for setting the parameter k to convert saturation of color image based on the attribute such as r,g,b [original] values which can be set in advance).

5. Claims 14, 22-23, 31, 33, 34-35 and 38 are rejected under 35 USC 102 (b) as being unpatentable over Eschbach et al. (US 5,450, 217) in view of Miyashita (US 6,031543).

Regarding claim 14, 31, 34 and Eschbach discloses discriminating characteristics of an image (Eschbach, col. 6, lines 6-10, Eschbach shows discriminating the color value of pixel in the image r,g,b = (255, 254, 253) which corresponds to discriminating characteristics of an image);

calculating saturation information of the image (Eschbach, col, lines 6-10, Eschbach shows converting the image pixel vale into luminance-hue- saturation space

and saturation of the image pixel is 0.008 which corresponds to calculating saturation information of the image);

setting a parameter used to convert saturation of the image in accordance with characteristics discriminated (Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". This corresponds to setting a parameter used to convert saturation of the image in accordance with characteristics discriminated);

converting the saturation of the image on the basis of the parameter (See Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". Examiner notes saturation of the overall image is enhanced based on Starget [parameter] and Sav [characteristic discriminated] using digital filter. This corresponds to converting the saturation of the image on the basis of the parameter).

Eschbach however has not disclosed plurality of parameters in correspondence with low and high saturation sides of the image.

In the same field of endeavor Miyashita discloses plurality of parameters in correspondence with low and high saturation sides of the image (Miyashita in col. 6, lines 26-30, Miyashita states "FIG. 10, the farther away it from the origin of a* b* plane the higher the saturation becomes in other words the closer it is to the origin the lower saturation becomes. Thus the saturation can be enhanced by enlarging the circle or lowered by reducing the circle". Examiner notes that a* and b* corresponds to plurality of parameters in correspondence with low and high saturation sides of the image).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use plurality of parameters in correspondence with low and high saturation sides of the image as shown by Miyashita in the system of Eshbach because such a process provide a system of controlling of execution of color correction visually.

Regarding claim 22-23, 33, 35 and 38 Eschbach discloses discriminating characteristics of an image (Eschbach, col. 6, lines 6-10, Eschbach shows discriminating the color value of pixel in the image r,g,b = (255, 254, 253) which corresponds to discriminating characteristics of an image);

calculating saturation information of the image (Eschbach, col, lines 6-10, Eschbach shows converting the image pixel vale into luminance-hue- saturation space

and saturation of the image pixel is 0.008 which corresponds to calculating saturation information of the image);

setting a parameter used to convert saturation of the image in accordance with characteristics discriminated (Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". This corresponds to setting a parameter used to convert saturation of the image in accordance with characteristics discriminated);

converting the saturation of the image on the basis of the parameter (See Eschbach, col. 6, lines 53-66, states "average saturation is determined, average saturation is a value Sav [characteristic discriminated], next the value of Sav is thresholded against the value of Starget [parameter], received from external source. Based on the thresholded comparison binary 1 or 0 is returned to drive coefficient calculation to output either Sav/Starget if Sav < Starget or 1 digital filter which operates on received color space transform to enhance saturation of the overall image". Examiner notes saturation of the overall image is enhanced based on Starget [parameter] and Sav [characteristic discriminated] using digital filter. This corresponds to converting the saturation of the image on the basis of the parameter).

Eschbach however has not disclosed detecting a color distribution of the image on the basis of color distribution, generating gradation correction information of the image on the basis of of color distribution and performing gradation correction on the basis of gradation correction information.

In the same field of endeavor Miyashita discloses detecting a color distribution of the image on the basis of color distribution (Miyashita in FIGS. 22 and 23 shows create and color tone graph which is obviously color distribution of the image),

generating gradation correction information of the image on the basis of color distribution (Miyashita, in col. 11, lines 1-10, states "FIGS. 22 and 23 are process for correcting a* and b* values to change hue, the gradation conversion creates and display a gradation conversion curve according to specified parameter. At this point reference circle moves according to the parameter and hue is changed". This corresponds to generating gradation correction information of the image on the basis of color/hue distribution) and

performing gradation correction on the basis of gradation correction information (Miyashita, in col. 11, lines 1-10, states "FIGS. 22 and 23 are process for correcting a* and b* values to change hue, the gradation conversion creates and display a gradation conversion curve according to specified parameter. At this point reference circle moves according to the parameter and hue is changed". This corresponds to generating performing gradation correction on the basis of gradation correction information by changing the hue.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to detect a color distribution of the image on the basis of color distribution, generating gradation correction information of the image on the basis of color distribution and performing gradation correction on the basis of gradation correction information as shown by Miyashita in the system of Eshbach because such a process provide a system of controlling of execution of color correction.

Regarding claim 23, Miyashita discloses saturation conversion for an image which has undergone gradation correction (Miyashita, in col. 11, lines 33-38, states "operator specify a saturation parameter, the gradation conversion curve is displayed as specified by the user. As result the size of the reference circle according to specified parameter and saturation changes accordingly". This corresponds to aturation conversion for an image which has undergone gradation correction).

Allowable Subject Matter

6. Claims 24-25 are objected as being dependent on rejected base claim but would be allowable if rewritten in independent form including limitations of the base claim and any intervening claims.

Communication

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 703-308-9589. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ishrat Sherali

Patent Examiner

Group Art Unit 2621

March 15, 2005

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